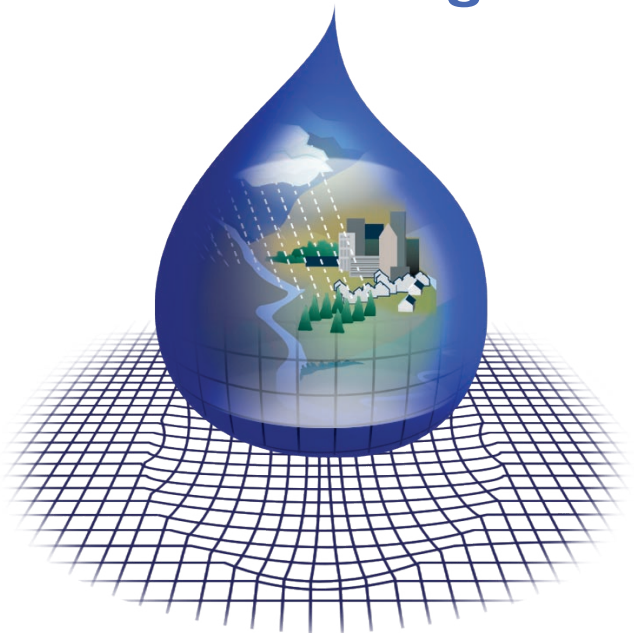
TMDL Modeling Toolbox



What is the Toolbox?

The TMDL Modeling Toolbox is a collection of models, modeling tools, and databases that have been utilized over the past decade in the development of Total Maximum Daily Loads (TMDLs). The Toolbox takes these proven technologies and provides the capability to more readily apply the models, analyze the results, and integrate watershed loading models with receiving water applications. The design of the toolbox is such that each of the models are stand alone applications. The toolbox provides an exchange of information between the models through common linkages. Due to the modular design of the Toolbox, additional models can be added easily to integrate with the other tools. In addition, the toolbox provides the capability to visualize model results, a linkage to GIS and non-geographic databases (including monitoring data for calibration), and the functionality to perform data assessments.

What models are in the Toolbox?

The Toolbox allows for the steady-state/dynamic simulation of mass transport and water quality processes in all types of surface water environments, including overland flow, small creeks, rivers, lakes, estuaries, coastal embayments, and offshore areas. The Toolbox contains assessment tools, watershed models, and receiving water models including the following:

Assessment Tools:

- Water Resources Database (WRDB)
- Watershed Characterization System (WCS)
- WCS Sediment Tool
- WCS Mercury Tool
- WCS LSPC Tool

Watershed Models:

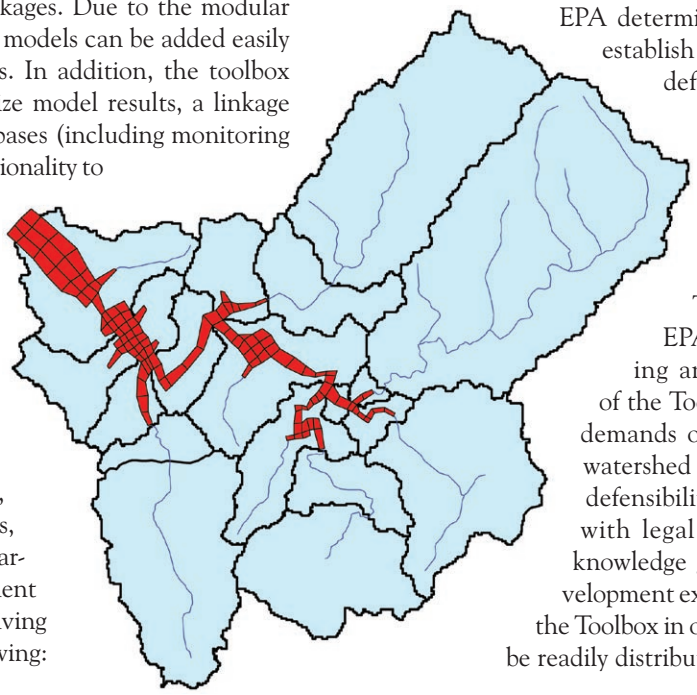
- Loading Simulation Program in C++ (LSPC)
- Watershed Assessment Model (WAMView)
- Storm Water Management Model (SWMM)

Receiving Water Models:

- A Dynamic One-Dimensional Model of Hydrodynamics and Water Quality (EPDRiv1)
- Stream Water Quality Model (QUAL2K)
- CONservational Channel Evolution and Pollutant Transport System (CONCEPTS)
- Environmental Fluid Dynamics Code (EFDC)
- Water Quality Analysis Simulation Program (WASP)

Why is the Toolbox being developed?

With the significant increase in the need for sophisticated modeling approaches for TMDL development, EPA determined that it is necessary to establish a level of consistency and defensibility for TMDL modeling tools. The Toolbox is designed to address a broad range of waterbody types and pollutants. EPA actively supports the components of the TMDL Modeling Toolbox. EPA is committed to enhancing and improving components of the Toolbox to meet the technical demands of the TMDL program and watershed protection. This will ensure defensibility when TMDLs are faced with legal challenges. Additionally, knowledge gained through TMDL development experience and modeling with the Toolbox in one region of the country can be readily distributed throughout others.



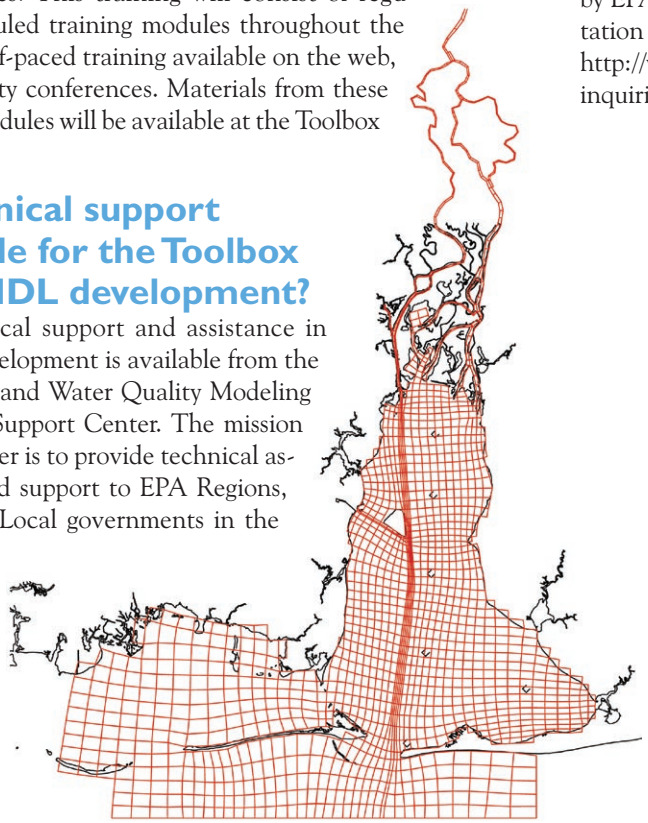
EPA United States Environmental Protection Agency

Have any of the Toolbox components been used for TMDL development?

The Toolbox models and databases have been used both independently and collectively to develop defensible TMDLs for a wide array of issues including pathogens, sediment, nutrients, dissolved oxygen, metals, temperature, and toxicants. The WCS Sediment Tool has been applied to sediment-impaired waters throughout the southeast. Mercury TMDLs were developed in Georgia using a combination of the WCS Mercury Tool and WASP. LSPC has been used in Alabama for pathogen TMDLs; Georgia, Tennessee, Kentucky, and Alabama for nutrient and/or dissolved oxygen TMDLs; and Alabama, West Virginia, and Arizona for metals TMDLs. EFDC has been used widely throughout the country to support TMDL development – Washington, California, Oklahoma, Florida, Mississippi, Alabama, North Carolina, West Virginia, Delaware, Pennsylvania, and Massachusetts. Toolbox model linkages have been successful in a number of situations, most notably for TMDL development in the Neuse Estuary NC, Cape Fear River NC, and Fenholloway River Estuary FL (EFDC and WASP) and TMDL development for Mobile Bay AL, Flint Creek AL, Coosa Lakes AL, Lake Allatoona GA, and Alabama River AL (LSPC, EFDC, and WASP).

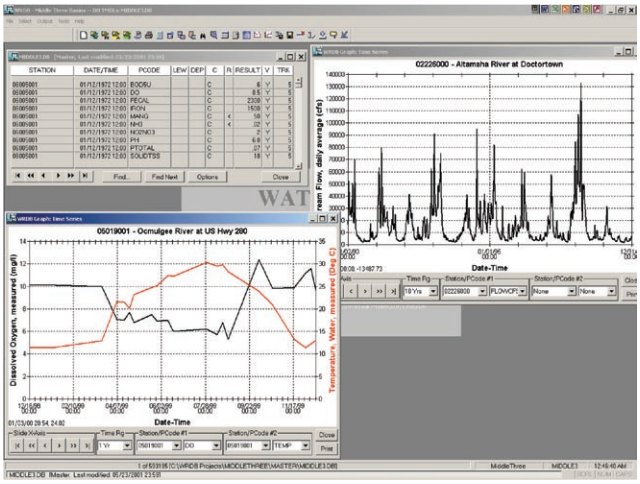
Is training available for the Toolbox?

A series of training courses is being designed to instruct users on the application of the Toolbox models, databases, and linkages. This training will consist of regularly scheduled training modules throughout the country, self-paced training available on the web, and specialty conferences. Materials from these training modules will be available at the Toolbox homepage.



Is technical support available for the Toolbox and TMDL development?

Yes, technical support and assistance in TMDL development is available from the Watershed and Water Quality Modeling Technical Support Center. The mission of the Center is to provide technical assistance and support to EPA Regions, State, and Local governments in the application of the Toolbox and development of TMDLs. The Center which is part of EPA's Office of Research and Development (ORD) is committed to providing access to technically defensible tools and approaches that can be used in the development of TMDLs, waste load allocations and watershed protection plans. Contact information for the Center is given below.



Where can I access the Toolbox and training materials?

A website for distribution of the Toolbox modules is supported by EPA. It includes all models and tools, as well as documentation and installation instructions. The Toolbox Website is http://www.epa.gov/athens/wwqtsc/index.html. For additional inquiries and information please contact:

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